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## The substance that empowers? DNA in South Asia.

Abstract: Drawing on two ethnographic examples of the socio-cultural aspects of populations genetic research in India, the paper explores in what ways tests aimed at assessing 'genetic differences' between populations can be viewed as enabling or disempowering for individuals, communities or nations subjected to such tests. The first one builds on a response to DNA research demonstrated by the leaders of the Jewish Bene Ephraim community of Andhra Pradesh, a Dalit group who in the late 1980s declared their descent from the Lost Tribes of Israel. The second focuses on the Indian Genome Variation Consortium, a research network established in India in 2003 with the aim of mapping the country's human genetic diversity. Building upon Prainsack and Toom's theoretical concept of situated dis/empowerment, I suggest that in both case studies empowering and disempowering elements of DNA testing appear to co-constitute and co-produce each other, as they both reinforce reductionist accounts of human sociality and serve as rhetorical tools for social and political liberation.

Key words: population genetics, India, Dalits, Bene Ephraim, genomic sovereignty.

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Aihwa Ong has observed in her Introduction to *Asian Biotech* that in Asia 'biotechnologies are allied to nationalist efforts to overcome past humiliations and to restore national identity and political ambition' (Ong 2010: 3). Writing specifically about the subcontinent, Kaushik Sunder Rajan has argued that India has been prioritising the development of science and technology as a way of

becoming a power to reckon with in the international arena. In the process of developing its involvement in the life sciences and biotechnology it has both displayed characteristics of a 'colonised' state actor *and* has framed itself as a 'global player' in biotech, he suggests (2006).

In this paper I would like to use ethnographic examples taken from two different cases in my research on the socio-cultural significance of population genetics to explore how the politics of science research has played out in the context of DNA studies, and in what ways tests aimed at assessing 'genetic differences' between populations can be viewed as enabling or disempowering for individuals, communities or nations subjected to such tests. The two case studies that I will use in this discussion are very different in scale. The first one builds on a response to DNA research demonstrated by the leaders of the Jewish Bene Ephraim community of Andhra Pradesh, a Dalit group who in the late 1980s declared their descent from the Lost Tribes of Israel.<sup>1</sup> The second focuses on a study aimed at categorizing and reconstructing the history of South Asian populations. In both cases I will discuss to what extent and in what ways DNA research engages with the agendas of those who solicit them – the Bene Ephraim leaders in the first case and Indian authorities in the second. What kind of data are DNA tests expected to yield and what meanings do different actants ascribe to these data? ~~How is agency distributed in identification practices involving DNA collection?~~ Do genetic tests leave any room for a rhetorical reinterpretation of the produced findings?

Reflecting on the role that genetics has played in projects aimed at reconstructing collective and individual pasts, the historian of science Marianne Sommer has observed that 'We have only just begun to understand the complex processes at work when DNA technologies enter into cultures of remembrance. Nonetheless, our current knowledge points towards the importance of the history and diversity of these cultures for the ways in which communities may or may not come to (re) imagine themselves in terms of new genetically based histories and in relation to biosocialities, which may or may not (re) form around genetic markers of ancestry' (2010: 387). This paper will use the case studies mentioned above to continue the discussion, which has been on-going in the social studies of science about the potential socio-cultural and political

consequences of population genetic research concerned with reconstructing human histories. It has been widely noted that, on the one hand, DNA research, which builds upon notions of biological determinism, has an unavoidable tendency to naturalise and therefore reinforce existing categories of people based on perceived genealogical and social differences (Abu El-Haj 2007, Duster 2005, Palmie 2007, Palsson 2007, Reardon 2005, Simpson 2000, Skinner 2006, Smart et al 2008). DNA has thus often been described as a substance that reinstates biological notions of personhood, and genetic anthropology appears to be, as Sommer has put it, 'part of backward-looking socialities' (2010: 370).

At the same time, it has also been shown [that](#) though 'DNA evidence' is widely deployed as a rhetorical means for inscribing identities, it is often used selectively to support favoured accounts about the origin and historical development of different groups (Nelson 2008, Egorova 2009a, Egorova 2009b, Prainsack and Hashiloni Dolev 2009). In this paper I would like to take this discussion in a congruous yet somewhat different direction, and explore the complex roles that 'DNA substance' has emerged to play in the 'tissue economies' (Waldby and Mitchell 2006) of contemporary India. In the first case study I will examine how, in an attempt to prove their Jewish origin to outsiders, the community of the Bene Ephraim have tried to use 'DNA evidence' as a source of identity arbitration. I will argue that though community leaders seem to recognize the reductionist agenda of DNA research, they also see it as a potent rhetorical weapon to use against those who have raised doubts about their Jewishness, and as a last resort to prove their origin narrative. In their case, DNA thus emerges both as a vehicle for transmitting a time-old naturalizing discourse of 'Jewish difference', and as a new, subaltern, means for social empowerment.

My second case considers research aimed at creating a genetic map of Indian populations. It will be shown that one of the meta-objectives of studies in human genetic variation of the subcontinent has been to facilitate India's emergence as a market actor in the realm of global bionetworking by making local populations more 'accessible' for clinical trials conducted for multinational clinical companies. Just as the leaders of the Bene Ephraim feel that they need to subject their community to a novel biotechnological practice to secure their place among other Jewish groups around the world, Indian authorities are ready

to offer the 'merely risked' (Sunder Rajan 2010) bodies of their citizens to establish their position as a serious player on the international arena of global science.

In discussing the two cases I will rely on interviews conducted with the leaders of the Bene Ephraim in 2009 and 2010 and with ten scientists working in the field of population genetics, conducted from 2008 to 2010. In the second case study my discussion will also be based on an analysis of five articles presenting the rationale and findings of the Indian Genome Variation Consortium, a research network established in India in 2003 with the aim of mapping the country's human genetic diversity. In this respect I will be referring to interviews with IGVC scientists presented in these articles.

The paper will explore in this respect to what extent participation in contemporary practices of the life sciences and biotechnology possesses the potential to enable or disempower the tested, to 'overcome past humiliations' (Ong 2010: 3), or to surrender ambitions of sovereignty and autonomous notions of relationality. I will use in my discussion the concept of 'situated dis/empowerment', introduced by Barbara Prainsack and Victor Toom in the context of their research on surveillance and then further developed by Prainsack and Machado in their study of prisoner's views of DNA technologies (2012). This concept highlights the 'simultaneity of both empowering and oppressive effects' of this practice (2010: 102), drawing attention to the way the oppressive and enabling elements of technology are co-produced. Similarly, in this paper I will explore examples in which 'DNA evidence' empowers tested communities in some contexts while disempowering them in others, and will argue against a 'one-size-fits all' account about the role that DNA techniques play in matters of agency and power distribution.

### **Jewish DNA in India**

In June 2010 two papers appeared in major scientific journals - *Nature* and the *American Journal of Human Genetics* – which attempted to address the question about the "genetic structure" of the Jewish people (Behar et al 2010; Atzmon et al 2010). Both papers set out to assess the degree of Jewish

communities' "genetic" relatedness to each other and to their non-Jewish neighbours, and to explore whether the origin of contemporary Jews could be traced to the Middle East.

The two articles contribute to a sizeable body of genetic research that has endeavoured in one way or another to test the account of Jewish history, according to which contemporary Jews are genealogically connected to 'ancient Hebrews'.<sup>2</sup> Both in their interviews with me and in the mass media geneticists involved in such studies have warned against using genetics as a means of identifying either an individual or a community as Jewish or non-Jewish.<sup>3</sup> They appeared to perceive and describe this kind of genetic study as nothing more than a new tool for historical work that was already taking place. The researchers were adamant that being Jewish could not be reduced to DNA and argued that their work aimed at providing additional evidence to tackle a riddle of history, which otherwise could not be solved by using conventional historical tools. Every scientist stressed in the interviews that being Jewish had nothing to do with genetics and that Judaism should not be understood as a religion centered around a particular ethnicity. Many respondents emphasized that it was possible to convert to Judaism and acknowledged that not every person who considered himself or herself to be Jewish and came from a well-established Jewish community would have a genetic connection to the Levant.

As I have demonstrated elsewhere, genetic studies do not always reach a consensus about the way Jewish populations were founded (Egorova 2009a: 171-172). More importantly, so far professional historians have engaged with genetic research only to a very limited degree and normally refrain from using the findings of genetic anthropology as historical evidence (Egorova 2010a).

And yet, it appears that in some quarters the biologisation of Jewish history effected by genetics will unavoidably create the perception that DNA could be used as a much more potent, if not critical, marker of identification. An interesting example of this became evident during my ethnographic research on the Bene Ephraim of Andhra Pradesh (India).<sup>4</sup>

The community of the Bene Ephraim was established in the late 1980s in the village of Chebrole of Guntur District of Andhra Pradesh by a group of Christianised Madiga Dalits (untouchables) who declared that they belonged to

the Lost Tribes of Israel.<sup>5</sup> The group is led by two brothers who adopted the names of Shmuel and Sadok Yacobi. In 1991 they established a synagogue and introduced a number of Jewish rites into the practice of their congregation. At the moment, the Bene Ephraim number about one hundred and fifty people who are in one way or another associated with the community and are willing to emigrate to the State of Israel. In their everyday life community members strive to observe Jewish dietary laws, rules of circumcision, the Sabbath and the main Jewish holidays.

In 2002 Shmuel Yacobi published a book entitled *The Cultural Hermeneutics*, offering an account of the history of the community, which may be summarized as follows. The Bene Ephraim descended from the tribes of Israel, who in 722 BCE were exiled from the ancient kingdom of Israel by the Assyrians. After their sojourn in Persia, they moved to the northern part of the subcontinent, which was then populated by Dravidian groups. In the seventh century BCE, the subcontinent was conquered by the 'Aryans', who established the caste system and relegated the Dravidians and the Bene Ephraim to the positions of Shudras and untouchables respectively. Both groups were later forcibly relocated to the south of India, where they now reside. The current state of affairs in the community is explained as an unfortunate result of the further advance of 'Aryan rule', under which the Bene Ephraim lost their status and political significance, were reduced to poverty and, left with very few means of maintaining their tradition, almost forgot it entirely (Yacobi 2002).

It appears from the accounts of the Yacobis and of their village neighbours that the community began practising Judaism openly only in the late 1980s; however, the Yacobis maintain that their parents and grandparents had been aware of their Israelite origin and had practised Judaism in secret for a long time. The Judaisation of the Bene Ephraim has been dismissed by some commentators as an attempt by a former untouchable community to change its members' position in the local hierarchy, or to improve their material circumstances by moving to the state of Israel. The Yacobis stress that their low-caste status had nothing to do with the emergence of the Bene Ephraim. At the same time, Shmuel Yacobi concedes that his research and activism in respect of identifying the Israelite connection was partially driven by observing his fellow

members' exploitation at the hands of higher castes. Embracing the Jewish tradition was his way to vocalize a protest against the social system that put his community at a disadvantage.

Anthropologists and historians of Judaizing movements have discussed a number of socially marginalized groups who, similarly to the Bene Ephraim, have reinterpreted their condition of discrimination in light of Jewish history. Some of them turned to Judaism because the historical experience of the suffering of the Jewish people seemed to mirror that of their own (Parfitt and Trevisan Semi 2002: viii). In the twentieth century a considerable number of Judaizing movements emerged in different parts of Africa, as well as among African American groups. It has been demonstrated that for some of these groups, and particularly those that developed in the USA, embracing Judaism represented a protest against white supremacy and a search for new modes of self-understanding (Singer 2000, Markowitz et al 2003, Jackson 2005, Dorman 2006, Bruder 2008). Interestingly, these attempts to establish a connection with a community who had similar experiences of discrimination resonate with the efforts of Dalit groups who equated caste discrimination with racism by arguing that the severity of their oppression in India is comparable to if not worse than that of Black communities in the West (for a detailed discussion see Reddy 2005).

The story of the Bene Ephraim suggests both a desire to express social protest and a need to explore the past. However, as I demonstrate below, it also illuminates the strength of the perception that membership in the Jewish community is based on Jewish genealogy and that in issues of Jewish identity arbitration 'genetic evidence' has the potential to give one's claims a greater degree of cultural weight.

Recently the leaders of the community suggested that the Bene Ephraim should undergo DNA tests to prove that they were Jewish.<sup>6</sup> This understanding of the role of genetics appears to go well beyond the assertions of geneticists themselves, quoted above, that these studies are of general interest regarding ancestry and history, but are not applicable to individuals or communities for the purposes of identifying them as Jewish. Community leaders chose to



construe the Jewish people as a natural family and to use genetics to justify their place in it.

The Bene Ephraim were not the first Jewish community to see genetics as a route to external recognition. The Bene Israel, another Indian Jewish group, paid a great deal of attention to the outcomes of a genetic study conducted among them, and were delighted when the results turned out to be 'positive' (Parfitt and Egorova 2006, Egorova 2009b).<sup>7</sup> For both communities DNA identification becomes important in light of the fact that their early history is not well documented. Both the Bene Israel and the Bene Ephraim perceive DNA as a marker of identification that external agents are likely to recognise as valid.

At the same time, it is noteworthy that both the Bene Israel and the Bene Ephraim have a strong sense of being Jewish irrespective of what their 'genetic profile' (endorsed by Western science) may be. As Tudor Parfitt and I suggested elsewhere, the Bene Israel used the results of DNA research to affirm their Jewishness in the face of those who doubted their origin, but they made it clear that they were confident they were Jewish no matter what the tests would have indicated. Moreover, they reinterpreted these results in light of their own tradition as proving the community to be the 'purest of the Jews' (Parfitt and Egorova 2006). In the case of the Bene Ephraim, it appears that if a DNA study were to be carried out among them and its results proved to be negative, the community would be very unlikely to accept them. When I asked Sadok Yacobi about the possibility of genetic results turning to be negative, he replied that it was not possible, unless the geneticists were to make a mistake.

Communities like the Bene Ephraim and the Bene Israel struggle to produce material artefacts documenting their early history and feel that the only evidence of Jewish origin that they can offer their interlocutors is their DNA. The interest that the Bene Ephraim have expressed in embracing genetic history indicates that while accepting its biological determinism, they also perceive it as imbued with liberatory potential and thus construct the 'gene' both as an immutable determinant of identification and as a site of agency and re-signifiability. On the one hand, it forces the community to conform to a naturalistic, biologised account of Jewish history. On the other, it provides a novel and subaltern way of telling a story which cannot be convincingly told in

the absence of 'conventional' historical evidence.

Like other Dalits, the Bene Ephraim lack written sources of their early history. Like other Judaising movements, they cannot produce documented evidence of their genealogical connection to the Jewish people. They therefore see DNA as the only existing testimony to their Jewish connection, the only document of their heritage that all 'proper' Bene Ephraim carry within their bodies, the only piece of evidence they can produce despite their poverty and low social status. DNA is seen by community leaders as a substance that empowers, a trace of Jewishness which cannot be taken away from them. However, the question which remains to be asked is whether the perceived empowering elements of DNA testing - should such tests be performed on the Bene Ephraim - would translate themselves into positive developments for the community 'on the ground' or whether they will remain in the imagination of its leaders. Would the assertions of the Bene Ephraim about their genetic relatedness to the rest of the Jewish people have weight in the eyes of Israeli authorities? How much agency could they exercise in facilitating their migration to the Jewish State with or without 'genetic evidence' if the State were to decide against this migration? Finally, what would happen if such tests were conducted and the results turned out to be 'negative'? To return to Prainsack and Toom's concept of situated dis/empowerment, in the case of the Bene Ephraim, 'DNA evidence' contains the promise and the danger of both. The practice of genetic history gives the community hope to be able one day to produce proof of their origin, but stands in the way of creating an alternative account of Jewish relatedness, an account which would not involve biogenetic genealogy.

### **DNA 'when experiments travel'<sup>8</sup>**

In this section our attention will turn to a study of a much larger scale - the Indian Genome Variation (IGV) Consortium Project set up in 2003 to run for five years. The IGV is a research programme involving six laboratories of the Council of Scientific and Industrial Research, funded by the Government of India.<sup>9</sup> As one of the more recent papers published on the basis of the IGVC research states, the aim of the IGV initiative was 'to develop a database of

genomic variations in Indian population for predictive marker discovery in complex diseases' (Narang et al 2010: 1). This and other publications stemming from the IGV Project stress that Indian populations offer a fertile ground for genetic studies of complex diseases. For instance, an article which appeared in the *Journal of Genetics*, published by the Indian Academy of Science, explains that 'Indians, comprising about one-sixth of the world population, with large family sizes and high levels of endogamy, provide a unique resource for dissecting complex disease etiology and pathogenesis' (Indian Genome Variation

Consortium 2008: 3). The paper thus clearly construes Indian populations as a special biological resource, which is valuable because of the sheer numbers of people that it comprises, and the way these people are divided into castes. More

specifically, the Project attempted to find out if the frequencies of SNPs<sup>10</sup> associated with complex diseases were similar across different populations in India, whether the clusters of populations which shared similar SNP frequencies correlated with ethnic, linguistic or geographic population groups in India, and whether it was possible to identify 'at-risk' populations for complex disorders, poor response to medication and predisposition to infectious diseases (Indian

Genome Variation Consortium 2008: 4). In other words, were different categories of people in India prone to have different illnesses? Were people belonging to different 'ethnic' groups, speaking different languages, and living in different parts of the subcontinent going to differ on the level of biology?

Elsewhere I have discussed the socio-political context of studies in population genetics in India, and particularly, the time-old assumptions about the alleged 'biological' differences between Indian caste and linguistic groups that such studies appear to be based on (Egorova 2009a, Egorova 2010a). Here I will focus on one aspect of population genetic mapping in India, which connects this research to international clinical trials conducted in South Asia. The main product of the IGV initiative has been a database of genomic diversity in Indian populations. The web-site of the IGV Project, as well as the papers produced by it, often stress the potential benefits of this research for medical care. Thus, the IGVC web-site notes that two of the Project's objectives are to 'discover informative SNPs, CNVs and repeats in over 1000 genes of biomedically important metabolic and genetic networks and also genes of pharmacogenetic

relevance',<sup>11</sup> and to 'apply haplotype maps for disease association studies and pharmacogenomics'.<sup>12</sup> An article reporting the results of the IGV Project introduces a long list of complex disorders that the study aimed to map genetically. The paper states that 'the representative set of genes' that the study explored 'included drug-response genes, genes involved in cancer and aging, eye diseases, allergy and asthma, neuro-psychiatric, metabolic and cardiovascular disorders as well as genes involved in susceptibility to infections etc.' (Indian Genome Variation Consortium 2008).

Why did the scientists set an objective to explore how genes were involved in these multi-factorial conditions, and why did they need to know how exactly they were distributed in Indian populations? Who are the potential beneficiaries of this research? An article based on interviews with key representatives of the IGVC and published in *Nature Reviews Genetics* suggests that because of its large population and a high rate of infectious and chronic disease, India cannot afford Western-style models of health-care provision, and that therefore '[g]enomic sciences and related technologies can add value to India's local health-care system by emphasizing prediction and prevention, and possibly decreasing the cost of health care through better diagnosis, early detection, and improved treatment and management' (Hardy et al 2008: S9-S10). Such a predictive genetic database is thus aimed to help Indian authorities to improve the medical care of its population. The subjects who are supposed to be empowered by this research are first and foremost Indian citizens.

~~At the same time, the article goes on to observe that the 'key driver' behind the initiative were economic benefits and that a predictive population genetic database would make India a more attractive locale for international clinical trials.~~ As Hardy et al, who interviewed the Consortium's scientists, note:

'Participants explained to us that emerging innovative genomic-based initiatives such as the IGV contribute towards scientific capacity building, developing and retaining valuable human resources, and providing Indian scientists and the growing domestic private sector with a competitive edge on the global market. In a step towards this last goal,

members of the IGV have proposed developing a predictive population therapy database' ([Hardy et al 2008: S10](#)).

DNA research is clearly portrayed here as a tool for national empowerment – it is bound to build capacities and develop human resources of Indian science. Putting human genetic diversity on the map of India is supposed to result in putting India on the global map of cutting-edge research. But simple mapping is not the final goal of this endeavor - the mapping exercise has to lead to the development of a 'predictive population therapy database'. As IGVC representatives explained to the same author (quoted above), the advantage of using genomic sciences in the context of the Indian health care system, which 'cannot afford Western-style models of health-care provision,' is that it allows to 'predict and prevent' disease and can thus be expected to reduce the costs of health care. Let us leave for the moment the question about whether this approach to treatment will indeed result in cheaper and more effective treatment, and consider how Hardy's respondents further conceptualise the deployment of such a database in India. Surprisingly, having first stated that the IGV initiative was going to 'contribute towards scientific capacity building', and 'developing and retaining valuable human resources', the article goes on to observe that a predictive population genetic database would make India a more attractive locale for international clinical trials:

'The database, either solely using IGV data or potentially in combination with additional clinical data, would enable various clients to select clinical trial participants in order to stratify clinical trials. Multinationals have been increasingly conducting early stage clinical trials in India because of the cost savings and readily accessible, largely drug-naïve population resource. India has thus positioned itself as a global hub for conducting clinical trial research by investing in capacity and infrastructure. Some domestic companies subsidize their research and development (R&D) platforms by providing contract services for clinical trials for multinational and foreign companies. Accordingly, a 'predictive population database' could help maintain India's competitive edge by

improving the selection specificity through stratification of the test population, thereby further reducing the time and cost associated with conducting clinical trials in India (Hardy et al 2008: S10).

This passage suggests that what is at stake in the development of such a database, is not just India's chances to improve the health care of her citizens, but also her 'competitive edge' in the conduct of clinical trials. What is the context of such trials and what role has India come to play in them?

Clinical trials are carried out to establish the safety and efficacy of drugs and are now widely practiced in the developing world. Such experiments have in recent years developed from small scale localised experiments to complex trials involving thousands of people located in different countries (Simpson and Sariola 2012: 2). As Sunder Rajan has observed, various Indian actors, such as clinical research organisations (CROs),<sup>13</sup> the pharmaceutical industry and various regulatory and educational agents envisage India as a major experimental site in international clinical trials and welcome more and more global clinical trial activity into the country (2010). Sunder Rajan's study demonstrates that CROs are acutely aware of the importance of building up a positive image of such activities, and are adamant that high ethical standards should be maintained throughout the process. The story of clinical trials in India is thus much more complicated than that of Western entrepreneurs exploiting Indian populations, and requires analyzing the efforts that the Indian state itself makes to turn the country into a global experimental site. However, as Sunder Rajan has demonstrated, though Indian actors strive to surround clinical research with capacity-building initiatives and ethical safeguards, their efforts fail to mitigate the structural violence that clinical trials involve in Third World contexts, where due to structural inequalities, there are more 'bioavailable' (Cohen 2001, 2004) bodies ready to act as experimental subjects (Sunder Rajan 2010). Or, as Amit Prasad has discussed, while the people on whom drugs are tested give India an important advantage in the world market, they are very unlikely to benefit from the medications that will be developed following the trials. Moreover, due to the problems of Indian state healthcare, they hardly have proper access even to the drugs that are already available (Prasad: 2009: 4).

The predictive genetic database that the IGV consortium has produced is a critical example of an initiative in which a variety of Indian actors – scientists and managers of the IGVC, government officials, representatives of regulatory organisations – engage in promoting a piece of scientific research which both promises to secure India's place among the key players on the global arena of biotechnology, and to use the 'bioavailability' of Indian subjects in a more efficient way. Indeed, as Hardy et al's respondents suggested in the quote offered above, 'a "predictive population database" could help maintain India's competitive edge by improving the selection specificity through stratification of the test population, thereby further reducing the time and cost associated with conducting clinical trials in India' (Hardy et al 2008: S10). Initiatives such as the IGVC will indeed result in 'developing and retaining valuable human resources', only these will be human resources belonging to the ranks of scientists, while the human resources involved in clinical trials as test subjects will hardly have their skills, knowledge or well-being advanced.

As I have argued elsewhere, this type of mapping exercises have been presented by their initiators as an effort to promote India's 'genomic sovereignty' <sup>14</sup> that other, world-wide, mapping initiatives cannot provide (Egorova 2010b). Similarly, scientists and other stakeholders in the IGV Consortium endeavor to position Indian genomics as an equal partner in the international research arena, and to benefit and protect Indian patients. For instance, the hope was expressed that personalized genomic medicine will take off among Indian physicians due to their already existing familiarity with Ayurveda, a traditional form of personalized medicine, which is widely practiced across the country (Hardy et al 2008: S10). At the same time, there is the realization that protecting local health care interests will be a long and tortuous process. One of my informants suggested that tangible medical outcomes for Indian populations remain a long way away. Some of Hardy et al's interviewees/informants observed that there is no guarantee that Indian populations will receive any significant long-term economic or health-care benefits from this research at all (2008: S11). DNA testing is here called upon to enable the development of Indian science and technology at the expense of those

Indian citizens who become the 'merely risked' (Sunder Rajan 2010) victims of social inequalities and structural violence inherent in clinical trials.

~~At the same time, we cannot ignore the fact that the posited value of the genetic mapping that the IGV initiative had set out to produce is still highly speculative and the promise of more efficient clinical trials is used by IGV representatives as a rhetorical tool which is called upon to present their research as a necessary step in the direction of enhancing India's image of a serious player on the international arena of cutting-edge biotechnology research.<sup>15</sup> No matter whether the genetic mapping exercise will indeed make the process of conducting clinical trials in India more expedient, the very rhetoric of clinical trials merged with the rhetoric of DNA research is constituted in the discourse of IGV participants as empowering.~~

## Conclusion

To reflect on the wider implications of both case studies, it appears that DNA emerges here as a substance that dis/empowers. On the one hand, to build on Aihwa Ong's arguments, biotechnology contains a promise of overcoming past humiliations. For the Bene Ephraim and the Bene Israel, it is the humiliations associated with not being recognized as a '*bona fide*' Jewish community, and, in the case of the Bene Ephraim, humiliations associated with untouchability. Luckily for the Bene Israel, the results of a widely publicised study conducted among them turned out to be 'positive'. As many of my Bene Israel informants observed, this did not change anything in their self-perception; yet the results could nevertheless be used to counteract the arguments of those who doubted the community's origin narrative (Parfitt and Egorova 2006: 116). When I visited the Bene Israel seven years after the tests were conducted, a number of respondents stated their satisfaction that the community had undergone the tests and that it was now proven once and for all that the Bene Israel were Jewish. Thus, paradoxically, DNA testing conducted among Judaising movements in different parts of the world, which, to use Sommer's phrase, many commentators would unmistakably identify as 'part of backward-looking socialities', has acquired a strong reputation as a social liberation tool.



For the Indian government, which funded the IGV initiative, it is the humiliations of the sub-continent's colonial past that it is striving to overcome through developing biotechnology. As Aditya Bharadwaj has put it, 'India is rapidly challenging its established global image as a provider of call centres, cheap technical labour and information technology products, by aggressively colonizing the unlikely global site of biotechnology research and innovation' (2009: 6). As was shown above, the participants of the IGV Consortium desire to promote through their work an image of India as a locale for competitive and innovative R&D. In doing so they strive not just to present the Project's achievements in high-profile journals published in the West, but to involve traditional Indian medicine and to ensure that their findings eventually lead to an improved health-care system locally.

At the same time, the usage of biotechnology in the two cases both illuminates and reinforces global relations of social and political inequality, in addition to well-worn stereotypes about the alleged 'biological' differences between populations. Using DNA to prove a community's Jewishness re-inscribes notions about 'Jewish difference', which emerged in nineteenth century European anti-Semitic discourse.<sup>16</sup> Studies in human population genetics in India, similarly, reinforce the idea that different caste, regional and linguistic groups of the subcontinent are biologically distinct.

I therefore suggest that the examples considered here portray a nuanced and complex picture of the social implications of DNA technology. Far from being seen purely as a mechanism of neo-colonial oppression, it is being actively used not just by the Indian government to advance the development of biotechnology in the country, but is also called upon by a community of Dalits who are likely to have very little control over the results of a genetic study that could potentially be conducted among them. In the first case considered in the paper, the perceived empowering aspect of biotechnology stems from the fact that every person, irrespective of her social and economic profile, possesses DNA and can produce it 'on demand'. The inherently reductionist nature of DNA testing is thus construed here as liberating. In the second case, the Indian government has funded an exercise to map and categorise the genetic profile of its populations. The exercise promises to empower the Indian people through securing India's

'genomic sovereignty' (Benjamin 2009, Egorova 2010), but it also strives to make them more 'bioavailable' for Western consumption.

It is noteworthy that both projects are of course vastly different both in scale and in terms of their power to actualize the claims that they make. In the case of the Bene Ephraim, their claims to a different status in the local hierarchy depend on a wide range of actors - from their immediate neighbours to local and national authorities. As David Moss observes in his study of Christian Dalits of Tamil Nadu, different initiatives of Dalit self-empowerment do not automatically bring changes in the way these communities are viewed or treated in Indian society. As he put it, such 'redefinition of identity' 'is dependent upon the unlikely recognition of dominant castes' (2010: 255). Moreover, in the case of the Bene Ephraim, the recognition of their claim to a connection to the Jewish people and to their right to immigrate to the State of Israel also depends on Israeli authorities.<sup>17</sup>

The case of the IGVC is obviously rather different. This project in establishing India's 'genomic sovereignty' is funded by the government of India itself, who therefore by implication can be seen as a participant in the project's design and implementation. On many levels, India's government is bound to have more control over such a study than the Bene Ephraim would have over their suggested DNA tests. And yet, the IGV initiative shares one important feature with our first ethnographic example. Like in the case of the Bene Ephraim, here, the empowering aspects of genetic testing have a rhetorical dimension.<sup>18</sup> The posited value of the genetic mapping that the IGV initiative had set out to produce is still highly speculative and the promise of more efficient clinical trials is used by IGVC as a rhetorical tool.<sup>19</sup> Just like the leaders of the Bene Ephraim hope that DNA tests will bring relevant home and overseas commentators to recognizing the community's new status, IGVC representatives can only hope that a predictive population database will eventually help India enhance her image of a serious player on the international arena of cutting-edge biotechnology research, but at least at this moment in time, they cannot be sure of this outcome. The Bene Ephraim leaders cannot possibly know what results DNA tests would have for them, but they already conceptualise these tests as a potential pathway to recognition and liberation. Similarly, no matter whether the

genetic mapping exercise will indeed make the process of conducting clinical trials in India more expedient, the very rhetoric of clinical trials merged with the rhetoric of DNA research in the discourse of IGV participants constitutes IGV initiative as a necessary step in the direction of enriching India's scientific capacity. In both cases, the empowering and disempowering elements of DNA testing appear to co-constitute and co-produce each other, a phenomenon which demands greater attention be paid to the context-dependent nature of power distribution processes in the application of biotechnologies.

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#### BIBLIOGRAPHY

- Abu El-Haj, Nadia. 2007. The genetic reinscription of race. *Annual Review of Anthropology* 36: 283-300.
- Atzmon, G. et al. 2010. Abraham's children in the genome era. *American Journal of Human Genetics* 86: 850-859.
- Behar, Doron et al. 2010. The Genome-wide structure of the Jewish people. *Nature* 466: 238-242.
- Ben-Dor Benite, Zvi. 2009. *The Ten Lost Tribes: a world history*, New York; Oxford University Press.

Benjamin, Ruha. 2009. A Lab of Their Own: Genomic Sovereignty as Postcolonial Science Policy. *Policy and Society* 28: 341-355.

Bharadwaj, Aditya and Peter Glasner. 2009. *Local cells, global science. The rise of embryonic stem cell research in India*. London and New York: Routledge

Bruder, Edith. 2008. *The Black Jews of Africa: history, religion, identity*. New York: Oxford University Press.

Carrithers, M. (2009) Introduction. In *Culture, Rhetoric and the Vicissitudes of Life*, ed. M. Carrithers, 1-18. New York, Oxford: Berghahn Books.

Cohen, Lawrence. The other kidney: biopolitics beyond recognition, *Body and Society* 7: 9-29.

Cohen, Lawrence. 2004. Operability, bioavailability, and exception. In *Global Assemblages: technology, politics, and ethics as anthropological problems*, ed. Aihwa Ong and S.J. Collier, 79-91. Oxford: Blackwell Publishing.

Dorman, Jacob. 2006. 'Black Israelites aka Black Jews aka Black Hebrews: Black Israelitism, Black Judaism, Judaic Christianity'. In *Introduction to New and Alternative Religions in America*, ed. E. V. Gallagher and W.M. Ashcraft, 59-85. Westport: Greenwood Press.

Duster, Troy. 2005. Race and reification in science. *Science* 307: 1050-1051.

Egorova, Yulia. 2009a. The truth is in the genes? Jewish responses to DNA research. *Culture and Religion* 10, no. 3: 159-177.

Egorova, Yulia. 2009b. De/geneticizing caste: population genetic research in South Asia. *Science as Culture* 18, no. 4: 417-434.

Egorova, Yulia. 2010a. DNA Evidence? The impact of genetic research on historical debates. *BioSocieties* 5, no. 3: 348-365.

Egorova, Yulia. 2010b. Castes of genes? Representing human genetic diversity in India, *Genomics, Society and Policy* 6, no. 3: 18-35.

Egorova, Yulia and Shahid Perwez. 2010. The Children of Ephraim: Being Jewish in Andhra Pradesh. *Anthropology Today* 26, no. 6: 14-19.

Egorova, Yulia and Shahid Perwez. 2012. Old memories, new histories: (re)discovering the past of Jewish Dalits. *History and Anthropology* 23, no.1: 1-15.

Egorova, Yulia and Shahid Perwez. 2013. *The Jews of Andhra Pradesh: Contesting Caste and Religion in South India*. New York: Oxford University Press.

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- Hardy, B.J. et al. 2008. From Diversity to Delivery: The Case of the Indian Genome Variation Initiative. *Nature Reviews Genetics* October: S9-S14.
- Indian Genome Variation Consortium. 2008. Genetic Landscape of the people of India: a canvas for disease gene exploration. *Journal of Genetics* 87, no 1: 3-20.
- Jackson, John. 2005. *Real Black: adventures in racial sincerity*. Chicago and London: University of Chicago Press.
- Jaffrelot, Christophe. 1996. *The Hindu Nationalist Movement and Hindu Politics, 1925 to the 1990s*. London: Hurst.
- Markowitz, F., S. Helman, & D. Shir-Vertesh. 2003. Soul Citizenship: the Black Hebrews and the State of Israel. *American Anthropologist* 105, no. 2: 302-312.
- M'charek, Amade. 2005. *The Human Genome Diversity Project. An Ethnography of Scientific Practice*. Cambridge: Cambridge University Press.
- Moss, David. 2010. The Catholic Church and Dalit Christian Activism in Contemporary Tamil Nadu. In *Margins of Faith: Dalit and Tribal Christianity in India*, ed. R. Robinson and J.M. Kujur, 235-263. New Delhi: Sage.
- Narang, Ankita, et al. 2010. IGVBrowser – a genomic variation resource from diverse Indian populations. *Database*. Article ID baq022.
- Nelson, Alondra. 2008. Bioscience: genetic genealogy testing and the pursuit of African ancestry *Social Studies of Science* 38: 759-783.
- Ong, Aihwa. 2010. Introduction. An analytics of biotechnology and ethics at multiple scales. In *Asian biotech. Ethics and communities of fate*, ed. A. Ong and N.C. Chen, 1-55. Durham and London: Duke University Press.
- Palmie, Stephan. 2007. Genomics, divination, "racecraft". *American Ethnologist* 34: 205-222.
- Palsson, Gisli. 2007. How deep is the skin? *BioSocieties* 2: 257-72.
- Parfitt, Tudor. 2002. *The Lost Tribes of Israel*. The history of a myth, London: Pheonix.
- Parfitt, Tudor and Yulia Egorova. 2006. *Genetics, Mass Media and Identity: A Case Study of the Genetic Research on the Lemba and Bene-Israel*. London: Routledge.

- Parfitt, Tudor and Emanuela Trevisan Semi. 2002. *Judaising movements*. London: Curzon.
- Petryna, Adriana. 2009. *When Experiments Travel: Clinical trials and the global search for human subjects*. Princeton: Princeton University Press.
- Prainsack, Barbara and Yael Hashiloni-Dolev. 2009. Religion and nationhood: collective identities and the new genetics. In *Genetics and Society Handbook: mapping the new genomic era*, ed. Peter Glasner and Margaret Lock, 404-422. P. Glasner and M. Lock. London: Routledge.
- Prainsack, Barbara and Helena Machado. 2012. *Tracing Technologies: prisoners' views in the era of CSI*, Farnham and Burlington: Ashgate.
- Prainsack, Barbara and Victor Toom. 2010. The Prum regime. Situated dis/empowerment in transnational DNA profile exchange. *British Journal of Criminology* 50: 1117-1135.
- Prasad, Amit. 2009. Capitalizing disease: biopolitics of drug trials in India, *Theory, Culture, Society*, 26: 1-29.
- Reardon, Jenny. 2005. *Race to the Finish: Identity and Governance in an Age of Genomics*. Princeton and Oxford: Princeton University Press.
- Reddy, Deepa. 2005. The Ethnicity of Caste, *Anthropological Quarterly*, 78: 543-584.
- Rose, Nikolas. 2007. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*. Princeton and Oxford: Princeton University Press.
- Simpson, Robert. 2000. Imagined genetic communities: ethnicity and essentialism in the twenty-first century, *Anthropology Today* 16: 3-6.
- Simpson, Robert and Salla Sariola. Forthcoming. Blinding authority: randomized clinical trials and the production of global scientific knowledge in contemporary Sri Lanka. *Science, Technology and Human Values*.
- Singer, Merril. 2000. Symbolic identity formation in an African American Religious Sect: The Black Hebrew Israelites'. In *Black Zion: African American Religious Encounters with Judaism*, ed., Yvonne Chireau and Nathaniel Deutsch, eds., *Black Zion: African American Religious Encounters with Judaism*, New York, Oxford: Oxford University Press.

- Skinner, David. 2006. Racialized futures: biologism and the changing politics of identity, *Social Studies of Science* 36: 459-488.
- Sommer, Marianne. 2010. DNA and cultures of remembrance: anthropological genetics, biohistories and biosocialities. *BioSocieties* 5, no. 3: 366-390.
- Still, Clarinda. 2007. *Gender, Education and Status in a Dalit community in Andhra Pradesh, South India*, PhD diss., London School of Economics.
- Sunder Rajan, Kaushik. 2006. *Biocapital. The constitution of postgenomic life*. Durham and London: Duke University Press.
- Sunder Rajan, Kaushik. 2010. The experimental machinery of global clinical trials. In *Asian biotech. Ethics and communities of fate*, ed. A. Ong and N.C. Chen, 1-55. Durham and London: Duke University Press.
- Waldby, Cathrine and Robert Mitchell. 2006. *Tissue Economies: blood, organs and cell lines in late capitalism*. Durham and London: Duke University Press.
- Yacobi, Shmuel. 2002. *The Cultural Hermeneutics. An introduction to the cultural transactions of the Hebrew Bible among the ancient nations of the Thalmudic Telugu empire of India*. Vijayawada: Hebrew Open University Publications.

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<sup>1</sup> For a wider discussion of the history of the Lost Tribes tradition see Ben-Dor Benkte 2009. For an analysis of other communities who embraced Lost Tribes descent see Parfitt 2002 and Parfitt and Trevisan Semi 2002.

<sup>2</sup> For a fairly detailed source of scientific paper and mass media articles on this research see <http://www.khazaria.com/genetics/abstracts.html>.

<sup>3</sup> For a discussion of the mass media representations of genetics see Abu El-Haj 2004, Parfitt and Egorova 2006.

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<sup>5</sup> For research on the Madiga see Still 2007. For research on the Bene Ephraim see Egorova and Perwez 2010 and Egorova and Perwez 2012.

<sup>6</sup> Sadok Yacobi, personal communication, December 2009.

<sup>7</sup> For research on the Bene Israel and the relationship between their Jewish and Indian heritage, see, for instance, Isenberg 1988, Weil 1994.

<sup>8</sup> I borrow this phrase from A. Petryna. 2009. *When Experiments Travel: Clinical trials and the global search for human subjects*. Princeton: Princeton University Press.

<sup>9</sup> [www.igvdb.res.in](http://www.igvdb.res.in) (accessed on 25 July 2012).

<sup>10</sup> SNP (a single-nucleotide polymorphism, abbreviation pronounced as *snip*) is a variation in DNA sequence, which occurs when a single nucleotide (A, T, C, or G) in the genome differs.

<sup>11</sup> CNVs (copy-number variations) – alterations of the DNA of a genome which happens when the cell has an abnormal number of copies of one or more DNA sections.

<sup>12</sup> [www.igvdb.res.in](http://www.igvdb.res.in) (accessed on 25 July 2012).

<sup>13</sup> Clinical research organisations (CROs) are organisations involved in the management and administration of clinical trials. CROs emerged as a new institution to mitigate for the organizational complexity of clinical trials (Sunder Rajan 2010: 57).

<sup>14</sup> For a socio-cultural analysis of the concept of genomic sovereignty, see Benjamin 2009.

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<sup>15</sup> ~~I am grateful to Deepa Reddy for bringing this point to my attention.~~

<sup>16</sup> For a discussion of the shift from Christian anti-Semitism to racial anti-Semitism in the late nineteenth Europe, which, in its turn, led to the emergence of 'race science' in the Zionist discourse, see Efron 1994, Weikart 2006.

<sup>17</sup> For a detailed discussion see Egorova and Perwez 2013.

<sup>18</sup> In discussing the rhetorical dimension of DNA research I draw inspiration from the culture rhetoric theory (see Carrithers 2009).

<sup>19</sup> I am grateful to Deepa Reddy for bringing this point to my attention.

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